



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application.: 10/748,725

) Docket No.: 7735-NES

Patent No: 7,005,087

Issue Date: February 28, 2006

Invention: COMPOSITION AND METHOD FOR PREVENTING FOULING IN (METH) ACRYLIC ACID PROCESSES

Commissioner of Patents  
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Certificate  
MAR 15 2006  
of Correction

CERTIFICATE OF CORRECTION

Sir:

It is respectfully requested that a Certificate of Correction be issued for the above - referenced patent in accordance with the provisions of Rule 1.322 to correct the claims 1-17 with the appropriate 1-17 claims attached to this certificate of correction. We are also requesting a reprint of the patent. This appears to be a USPTO error, because in the image wrapper for this case there were a new set of claims submitted on 11/23/05 that were from a different firm for a different case. Please correct this error as soon as possible. Thank you.

As this correction is the result of an Office Mistake no fee is required. However, if any fee is required, please charge Deposit Account No. 14-0105.

Respectfully submitted,

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CERTIFICATE OF MAILING

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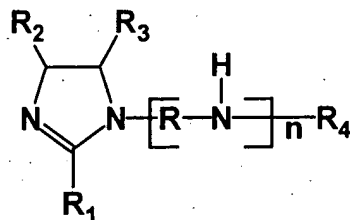
I hereby certify that this correspondence is being deposited with the U.S. Postal Service as First Class Mail in an envelope addressed to: Commissioner of Patents, P.O Box 1450, Alexandria, VA 22313-1450, on the date below:

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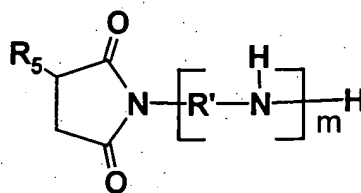
CLAIMS

1. A composition comprising (meth)acrylic acid and one or more of the compounds selected from the group consisting of aminoalkyl imidazolines of formula (I)



(I)

and alkyl-substituted succinimides of formula (II)



(II)

and mixtures thereof wherein n is an integer of 1 to about 9; m is an integer of 1 to about 10; R and R' are C<sub>1</sub>-C<sub>6</sub> alkylene; R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>5</sub> are independently selected from C<sub>1</sub>-C<sub>30</sub> alkyl, alkenyl, aryl, alkylaryl, arylalkyl, aminoalkyl, and aminoaryl; and R<sub>4</sub> is selected from hydrogen, (CH<sub>2</sub>)<sub>2</sub>COOH, CH<sub>2</sub>CH(CH<sub>3</sub>)COOH, imidazoline, alkyl and alkylaryl.

2. The composition of claim 1 wherein the aminoalkyl imidazoline is prepared by reacting a carboxylic fatty acid with a polyethylene polyamine.

3. The composition of claim 1 wherein the aminoalkyl imidazoline is prepared by reacting tall oil fatty acid with a polyethylene polyamine.

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4. The composition of claim 1 wherein the aminoalkyl imidazoline is prepared by (i) reacting tall oil fatty acid with a polyethylene polyamine; and (ii) reacting the product of step (i) with acrylic acid.

5 5. The composition of claim 1 wherein the alkyl-substituted succinimide is prepared by reacting a mixture of C<sub>12</sub>-C<sub>30</sub> olefins, maleic anhydride and polyethylene polyamine.

6. The composition of claim 1 wherein the alkyl-substituted succinimide is prepared by reacting a mixture of C<sub>12</sub>-C<sub>30</sub> olefins, maleic anhydride and diethylene triamine.

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7. The composition of claim 1 further comprising one or more polymerization inhibitors.

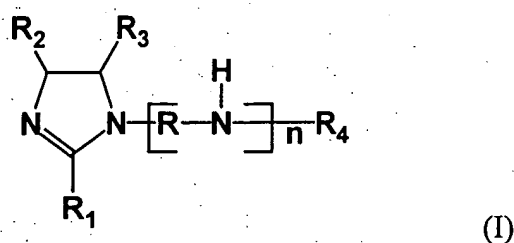
8. The composition of claim 1 further comprising one or more dispersants.

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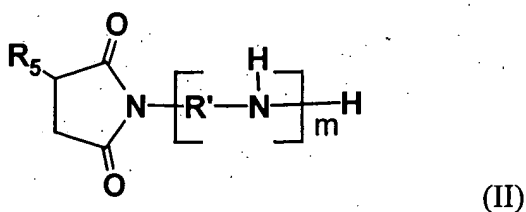
9. The composition of claim 1 further comprising one or more polymerization inhibitors and one or more dispersants.

10. The composition of claim 1 further comprising one or more solvents.

11. A method of preventing fouling in a (meth)acrylic acid process comprising adding to the process stream an effective antifouling amount of one or more aminoalkyl imidazolines of formula (I)



or one or more alkyl-substituted succinimides of formula (II)



or a mixture thereof wherein n is an integer of 1 to about 9; m is an integer of 1 to about 10; R and R' are C<sub>1</sub>-C<sub>6</sub> alkylene; R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>5</sub> are independently selected from C<sub>1</sub>-C<sub>30</sub> alkyl, alkenyl, aryl, alkylaryl, arylalkyl, aminoalkyl, and aminoaryl; and R<sub>4</sub> is selected from hydrogen, (CH<sub>2</sub>)<sub>2</sub>COOH, CH<sub>2</sub>CH(CH<sub>3</sub>)COOH, imidazoline, alkyl and alkylaryl.

12. The method of claim 11 wherein the aminoalkyl imidazolines or alkyl-substituted succinimides are added to the process at a dosage of about 1 to about 10,000 ppm.

13. The method of claim 11 wherein the aminoalkyl imidazolines or alkyl-substituted succinimides are added to the process at a dosage of about 10 to about 1000 ppm.

14. The method of claim 11 wherein the aminoalkyl imidazolines or alkyl-substituted succinimides are added to the process at a dosage of about 30 to about 300 ppm.

15. The method of claim 11 wherein the aminoalkyl imidazolines or alkyl-substituted succinimides are added continuously.
- 5 16. The method of claim 11 wherein the aminoalkyl imidazolines or alkyl-substituted succinimides are added intermittently.
17. The method of claim 11 wherein the (meth)acrylic acid process is selected from (meth)acrylic acid manufacturing processes, (meth)acrylic acid esterification processes, acrolein  
10 manufacturing processes and acrylonitrile manufacturing processes.

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